

CLAIMS

1. An electric power generating system, comprising:
 - a fuel cell stack comprising at least one solid polymer fuel cell;
 - a cooling system comprising a coolant flow path for directing coolant to and from the stack;
 - a fuel regulating system comprising a fuel flow path and for regulating the supply of fuel from a fuel supply to the stack via the fuel flow path; and,
 - a hydrogen concentration sensor located in the vicinity of the fuel regulating system, and in the coolant flow path at a location downstream of the stack.
2. The electric power generating system of claim 1 wherein the fuel regulating system is located in the coolant flow path at a location downstream of the stack.
3. The electric power generating system of claim 2, further comprising:
 - a conduit coupled to the stack and for directing a fuel exhaust stream from the stack to the coolant flow path.
4. The electric power generating system of claim 1, further comprising:
 - a fuel supply connector for connecting the fuel supply to the fuel flow path forming at least a portion of the fuel regulating system.
5. The electric power generating system of claim 4, further comprising:
 - a pressure relief valve in the fuel flow path forming at least a portion of the fuel regulating system.
6. The electric power generating system of claim 5, further comprising:
 - a main fuel valve in the fuel flow path forming at least a portion of the fuel regulating system.

7. The electric power generating system of claim 6, further comprising:
a hydrogen pressure regulator in the fuel flow path forming at least a portion of the fuel regulating system.

8. The electric power generating system of claim 1 wherein the coolant is air.

9. The electric power generating system of claim 8, further comprising:
a fan for directing coolant air to the stack forming at least a portion of the cooling system.

10. The electric power generating system of claim 9, further comprising:
a duct for directing the coolant air from the fan to the stack forming at least a portion of the coolant flow path.

11. The electric power generating system of claim 10, further comprising:
a number of coolant flow channels formed in the stack for enabling passage of coolant air through the stack forming at least a portion of the coolant flow path.

12. The electric power generating system of claim 10, further comprising:
a power generating system housing portion forming at least a portion of the coolant flow path that directs coolant air exhausted from the stack to the hydrogen concentration sensor.

13. An electric power generating system, comprising:
an air-cooled fuel cell stack comprising at least one solid polymer fuel cell;
a cooling system comprising a coolant air delivery device and a coolant air flow path for directing coolant air to and from the stack;
a fuel regulating system for regulating the supply of fuel from a fuel supply to the stack, the fuel regulating system comprising a fuel flow path for directing fuel from the fuel

supply to the stack, a fuel supply connector for connecting the fuel supply to the fuel flow path, a fuel pressure relief valve in the fuel flow path, a main fuel valve in the fuel flow path, and a pressure regulator in the fuel flow path, and,

a hydrogen concentration sensor located in the vicinity of the fuel regulating system, and in the coolant flow path at a location downstream of the stack.

14. The electric power generating system of claim 13 wherein the fuel regulating system is located in the coolant flow path at a location downstream of the stack.

15. The electric power generating system of claim 14 wherein the coolant air delivery device is a fan.

16. The electric power generating system of claim 15, further comprising:
a duct forming at least a portion of the coolant flow path for directing the coolant air from the fan to the stack.

17. The electric power generating system of claim 16, further comprising:
a number of coolant flow channels formed in the stack for enabling passage of cooling air through the stack.

18. The electric power generating system of claim 17, further comprising:
a power generating system housing portion forming at least a portion of the coolant air flow path that directs coolant air exhausted from the stack to the hydrogen concentration sensor.

19. The electric power generating system of claim 13, further comprising:
a conduit coupled to the stack and for directing a fuel exhaust stream from the stack to the coolant air flow path.

20. An electric power generating system, comprising:
a fuel cell stack comprising at least one solid polymer fuel cell;
a fluid flow path for directing fluid to and from the stack;
a fuel regulating system for regulating the supply of fuel from a fuel supply to the stack; and,

a hydrogen concentration sensor located in the fluid flow path at a location downstream of the stack.

21. The electric power generating system of claim 20 wherein the hydrogen concentration sensor is located in the vicinity of the fuel regulating system.

22. The electric power generating system of claim 21 wherein the fluid flow path is a coolant flow path.

23. The electric power generating system of claim 22 wherein the fuel regulating system further forms a fuel flow path for directing the fuel supply to the stack.

24. The electric power generating system of claim 23 wherein the fuel regulating system is located in the coolant flow path at a location downstream of the stack.

25. The electric power generating system of claim 24 wherein the coolant is air.

26. The electric power generating system of claim 25, further comprising:
a fuel supply valve connectable to the fuel supply source forming at least a portion of the fuel regulating system.

27. The electric power generating system of claim 26, further comprising:
a pressure relief valve in the fuel flow path forming at least a portion of the fuel regulating system.

28. The electric power generating system of claim 27, further comprising:
a main fuel valve in the fuel flow path forming at least a portion of the fuel regulating system.

29. The electric power generating system of claim 28, further comprising:
a hydrogen pressure regulator in the fuel flow path forming at least a portion of the fuel regulating system.

30. The electric power generating system of claim 25 wherein the coolant flow path includes a duct for directing the coolant to the stack.

31. The electric power generating system of claim 30, further comprising:
a number of coolant flow channels formed in the stack for enabling passage of coolant air through the stack.

32. An electric power generating system, comprising:
a fuel cell stack comprising at least one solid polymer fuel cell;
means for directing coolant to and from the stack, comprising a coolant flow path;
means for regulating the supply of fuel from a fuel supply to the stack; and,
a hydrogen concentration sensor located in the vicinity of the means for regulating the supply of fuel, and in the coolant flow path at a location downstream of the stack.